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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/010,646	11/13/2001	Xiaofeng Han	980.1076US01	4858

38846 7590 03/30/2005

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MPIS, MN 55402

EXAMINER

LEE, HWA S

ART UNIT	PAPER NUMBER
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2877

DATE MAILED: 03/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

Office Action Summary	Application No. 10/010,646	Applicant(s) HAN ET AL.	
	Examiner Andrew Hwa S. Lee	Art Unit 2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 January 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 and 18-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 20-37 is/are allowed.
- 6) ☒ Claim(s) 1-14, 18 and 19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Remarks

This office action is in response to the applicant's amendment of 2/2/05.

By the amendment, claims 1-14 and 18-37 are now pending. Claim 20 has been amended. New claim 37 has been added.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. **Claims 1-14, and 18-19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (US 6,459,487).

Chen et al (Chen hereinafter) shows a system and method for fabricating components of precise optical path length comprising:

a first birefringent element (34) oriented to split the polarized input light beam into a first polarized beam and a second polarized beam having a polarization direction different to a polarization direction of the first beam;

a second birefringent element (40) oriented to combine the first and second polarized beams into an output beam; and

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a polarization sensitive detection unit (42, 44, 18, and 20) disposed to detect a selected polarization of the output beam.

wherein the first birefringent element is oriented to receive the polarized input light beam along a z-direction, a y-direction is defined perpendicular to the z-direction and at 45 degrees to the polarization direction of the polarized input light, an x direction is defined orthogonal to both the y-direction and the z-direction and the first birefringent element has an optical axis lying at a selected angle Θ relative to the z-direction in the y-z plane defined by the y-direction and the z-direction, the second birefringent element having an optical axis lying at the negative of the selected angle $-\Theta$ relative to the z-direction in the y-z plane defined by the y-direction and the z-direction.

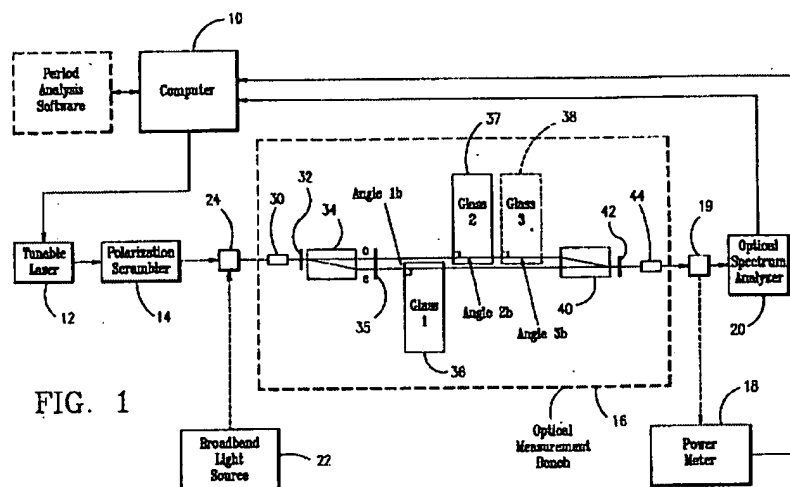


FIG. 1

Chen does not expressly say that the first and second polarized beams have a polarization direction that is orthogonal to each other.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to have the polarization direction of the first beam orthogonal to the polarization direction of the second beam. Chen teaches that one beam is e polarized and the other beam is o polarized and

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that a $\frac{1}{2}$ waveplate is used to rotate the polarization of one of the beams by 90 degrees in order combine the beams thus suggesting to one of ordinary skill in the art to have the e polarization orthogonal to the o polarization. Please see column 6, lines 6-13.

As for **claim 2**, Chen shows a light source (12 and 22) disposed to transmit the polarized input light beam to the first birefringent element.

As for **claim 3**, Chen shows that the light source (12) is a laser thus inherently producing a polarized beam and furthermore, Chen uses a polarization descrambler (30) to scramble the polarized beam and then uses a polarizer (32) to polarize the depolarized beam, thus suggesting to one of ordinary skill in the art that the descrambling the polarizing cleans the polarization of the beam.

As for **claim 4**, Chen shows the light source (22) includes a light generator that generates an unpolarized output, the unpolarized output passing through a polarizer (32) to produce the polarized input light beam.

As for **claim 5**, Chen shows a broadband light source (22).

As for **claim 6**, Chen shows a laser (12).

As for **claim 7**, Chen shows a tunable laser (12).

As for **claim 8**, Chen shows a controller (computer 10) coupled to control operation of the at least one of the light source and the detector unit.

As for **claim 9**, Chen shows that the computer has an analyzer unit coupled to the detector unit to record an output from the detector unit (column 6, lines 37-41 and column 7, lines 6-18).

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As for **claim 10**, Chen shows an interface unit connected to the controller and couplable to a computer (column 5, lines 48+).

As for **claim 11**, Chen shows a polarizer (42) to select the selected polarization of the output beam from the second birefringent element.

As for **claim 18**, Chen shows the first and second polarized beams are spatially separated by the first birefringent element so that the first polarized beam does not overlap the second polarized beam between the first and second birefringent elements (please see figure 1).

As for **claim 19**, Chen shows the first and second birefringent elements are separated along a direction parallel to a propagation direction of the first and second beams so as to leave a gap between the first and second birefringent elements (please see figure 1).

Allowable Subject Matter

Claims 20-37 allowed for reasons argued by Applicant.

Response to Arguments

Applicant's arguments filed 1-11, and 18-19 have been fully considered but they are not persuasive. In the instance with Chen, the birefringent elements are shown to be rotated 180 degrees about their optical axis with respect to each other, and in the instant where the first one is positioned at 90 degrees, the other birefringent element would be at -90 degrees, thus meeting the limitation that one is at Θ , the other is at $-\Theta$.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Hwa S. Lee whose telephone number is 571-272-2419. The examiner can normally be reached on Tue-Fr.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley Jr. can be reached on 571-272-2800 ext 77. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'A. H. Lee', with a stylized flourish at the end.

Andrew H. S. Lee
Examiner
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